

GEORGIA INSTITUTE OF TECHNOLOGY
ENGINEERING EXPERIMENT STATION
PROJECT TERMINATION

Date: November 20, 1975

Project Title: Antenna Performance Analysis

Project No: A-1594-100

Project Director: Mr. B. O. Pyron

Sponsor: Armament Dev. & Test Center; Eglin AFB, Fla 32542

Effective Termination Date: 6/30/75

Clearance of Accounting Charges: 6/30/75

Grant/Contract Closeout Actions Remaining:

Invoice all allowable costs on this sub-project only. Final Invoice/Closing Documents, etc., for this contract will be submitted only after all sub-projects are closed-out.

Assigned to: Systems & Techniques Laboratory

COPIES TO:

Project Director
Director, EES
Assistant Director
Division Chief
EES Accounting
Patent Coordinator

Research Services/Photo Lab
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ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

28 January 1974

Air Development and Test Center
Attention: TSGGR (Bruce Arnold)
Eglin Air Force Base, Florida 32542

Reference: Contract F08635-74-C-0061
Item 0004, Antenna Performance Analysis
Subject: Monthly Contract Technical Status Report
No. 1, covering the period from 21 December 1973
to 20 January 1974.

Gentlemen:

In a telephone conversation on 21 December 1973, Captain Skipp of ADTC informed Mr. R. M. Goodman, Jr., Chief of the Sensor Systems Division, Engineering Experiment Station, that an additional Statement of Work would be added to the contract, then in the process of being written in response to Georgia Tech's proposal ST-SSD-74-007. This additional Statement of Work was to be designated as Item 0004, and to have a delivery date of "on or before 30 June 1974." As of 21 January 1974, the signed contract has not been received by Georgia Tech, but preliminary activities have been begun on the Item 0004 work.

On 9 January 1974, Dr. R. C. Johnson and Dr. J. E. Rhodes, Jr., of Georgia Tech visited Electronics Systems Laboratories, Inc., in Sunnyvale, California, at the sponsor's request. The purpose was to acquire information upon which the Item 0004 analysis will be based. While at ESL, conversations were held with personnel of ESL and of other activities. A preliminary copy of ESL Technical Memorandum 429 was examined during the visit, and a copy has since been supplied to us by ESL.

Available information has been reviewed, and planning of the forthcoming analysis has begun. Further data, upon which to base the analytical studies will be requested.

Respectfully submitted,

Berry O. Pyron ✓
Project Director
Project A-1594-100

dab

cc: Bob Phillips



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

28 February 1974

Air Development and Test Center
Attention: TSGGR (Bruce Arnold)
Eglin Air Force Base, Florida 32542

Reference: Contract F08635-74-C-0061
Item 0004, Antenna Performance Analysis

Subject: Monthly Contract Technical Status Report
No. 2, covering the period from 21 January 1974
to 20 February 1974.

Gentlemen:

Contract F08635-74-C-0061 was received by Georgia Tech during the period, and was signed and returned by the Georgia Tech Research Institute, contracting agency for Georgia Tech. Effective date of the contract is 21 December 1973.

Mr. R. M. Goodman, Jr., and Dr. J. E. Rhodes, Jr., of Georgia Tech visited ITT-Gilfillan on 8 February in order to consult with Mr. Grant, Mr. Werlin, and Mr. Capen. The latter, a consultant, was at ITT part of that day. Original data was examined and discussed, and it was requested that certain data be plotted out in an agreed-upon format and sent to Georgia Tech for further study and analysis. This material has not yet been received, as of this date.

Limited study has been continued, making use of data already in hand, consisting of the draft report received from ESL during the last period, and other information presented at the conference in Huntsville in October 1973.

Respectfully submitted,

Berry O. Pyron
Project Director, A-1594-100

dab

cc: Bob Phillips



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

2 April 1974

Armament Development and Test Center
Attention: TSGGR (Bruce Arnold)
Eglin Air Force Base, Florida 32542

Reference: Contract F08635-74-C-0061
Item 0004, Antenna Performance Analysis

Subject: Monthly Contract Technical Status Report
No. 3, covering the period from 21 February 1974
to 20 March 1974.

Gentlemen:

On March 11, 1974, Mr. Bob Phillips and Mr. Ken Greenlee visited Georgia Tech and held technical discussions with Georgia Tech personnel concerned with this project. A number of important technical data useful to our analysis were obtained in those discussions.

On March 18, 1974, a data package was received from ITT Gilfillan. This included a number of chart paper runoffs of selected recordings from Project LITTLE HOST missions, as well as a report concerning the LITTLE HOST operations. This information is currently being studied.

Analysis of all available data has been continued during the reporting period. A number of hypothetical scanning techniques have been reviewed for possible application to the system under study. The latest information, received during this period, is being considered in an effort to develop a system concept compatible with all available knowledge.

Respectfully submitted,

Berry O. Pyron
Project Director, A-1594-100

dab

cc: Bob Phillips



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

1 May 1974

Armament Development and Test Center
Attention: TSGGR (Bruce Arnold)
Eglin Air Force Base, Florida 32542

Reference: Contract F08635-74-C-0061
Item 0004, Antenna Performance Analysis

Subject: Monthly Contract Technical Status Report
No. 4, covering the period from 21 March
to 21 April 1974

Gentlemen:

Intensive study has begun on the selected LITTLE HOST runoffs that were received from ITT-Gilfillan late in the last reporting period. Initially, the analysis took the form of "eyeball" study to determine the range and type of forms visible in the patterns. Several scan modes were postulated and considered for their capability of exhibiting observed patterns. Late in the period, attention was focussed on one particular scan mode and a computer program written to investigate its potential fit. Initial results are encouraging, but further analysis will be required to determine whether a good fit can be obtained.

Also received at the same time was a copy of a presentation to the electronic working group at Huntsville on 3 October 1973, summarizing LITTLE HOST data.

On 1 April 1974, there was received a set of photographs and other data; this material is also being studied.

On 9 April 1974, Dr. R. C. Johnson, Mr. R. M. Goodman, Jr., and Dr. J. E. Rhodes, Jr., conferred with Mr. R. P. Phillips in Washington regarding progress on the work.

Respectfully submitted.

Berry O. Pyron
Project Director, A-1594-100

dab

cc: R. P. Phillips



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

30 May 1974

Armament Development and Test Center
Attention: TSGGR (Bruce Arnold)
Eglin Air Force Base, Florida 32542

Reference: Contract F08635-74-C-0061
Item 004, Antenna Performance Analysis

Subject: Monthly Contract Technical Status Report
No. 5, covering the period from 21 April
to 21 May 1974

Gentlemen:

Computer analysis is being continued toward the goal of demonstrating the goodness of fit of the postulated scan pattern to the observed LITTLE HOST patterns. The work is slow and tedious, because of the large number of variables and the sensitivity of the simulated patterns to the assumed values of the variables. The results, however, continue to be encouraging, and strengthen our belief that the postulated scan pattern is correct.

Messrs. R. P. Phillips and J. Lewis visited Georgia Tech on 30 April for a briefing on current activities. The status of the computer analysis was set forth and discussed.

On 2 May 1974, EES/GIT Unsolicited Proposal ST-SSD-74-007R1 was dispatched to ADTC. This proposal in essence suggests further computer analysis to verify the correctness of the postulated scan pattern, and to permit attention to be given to the design of the antenna, and to document all results.

Respectfully submitted,

Berry O. Pyron
Project Director
A-1594-100

dab

cc: R. P. Phillips



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

1 July 1974

Armament Development and Test Center
Attention: TSGGR (Bruce Arnold)
Eglin Air Force Base, FL 32542

Reference: Contract F08635-74-C-0061
Item 004, Antenna Performance Analysis

Subject: Monthly Contract Technical Status Report No. 6,
covering the period from 21 May to 21 June 1974

Gentlemen:

Computer analysis has been continued on the problem of fitting the available observed LITTLE HOST patterns with the postulated scan pattern. Several acquisitions have been selected for inclusion in the final report, and the assumed parameters are being adjusted to determine the best fit to the observations.

Work has been initiated on evaluation of the scan mechanism. The principal question is the possibility of a mechanism involving motion of the subreflector, and an available computer program applicable to this class of antenna is being used to investigate possible sets of parameters.

EES/GIT Unsolicited Proposal ST-SSD-74-007R1, which was dispatched to ADTC on 2 May 1974, has been accepted, and Georgia Tech has been notified that the add-on to the contract under Item 004 is effective 14 June 1974.

Work is continuing on development of material for the final report.

Messrs. R. P. Phillips and J. Lewis visited Georgia Tech on 10 June 1974 for a briefing on current activities. The status of the computer analyses was set forth and discussed, and plans made for the format of the final report.

Respectfully submitted,

Berry O. Pyron
Project Director
A-1594-100

BOP/mac

cc: R. P. Phillips



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

5 August 1974

Armament Development and Test Center
Eglin Air Force Base, FL 32542

Attention: TSGGR (Bruce Arnold)

Reference: Contract F08635-74-C-0061
Item 004, Antenna Performance Analysis

Subject: Monthly Contract Technical Status Report No. 7
Covering the Period from 21 June to 21 July 1974

Gentlemen:

Efforts during the period have been concentrated on preparation of material for the final report. Limited work has continued on the computer analysis, principally for the purpose of improving the fit of the simulation to the observed data for a few specific runs intended for inclusion in the final report.

On 9 July, Mr. Norman Capen of ITT-Gilfillan and Mr. Joe Maddux of ESL, Inc., visited Georgia Tech for the purpose of a briefing concerning the Item 004 work.

On 16 July, a presentation of the work was made at Redstone Arsenal, Alabama, to a committee of persons representing agencies interested in this system.

Respectfully submitted,

Berry O. Pyron
Project Director
A-1594-100

BOP/mac

cc: R. P. Phillips